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Gelbman

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(54) **ELECTRONIC-INK BASED DISPLAY DEVICE EMPLOYING AN ELECTRONIC-INK LAYER INTEGRATED WITHIN A STACKED ARCHITECTURE**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

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Related U.S. Application Data

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G06K 7/08 (2006.01)

(52) **U.S. Cl.** **235/451**; 235/383; 235/375; 235/492; 235/385; 340/5.91

(58) **Field of Classification Search** 235/451, 235/383, 375, 492, 385; 340/5.91
See application file for complete search history.

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(57) **ABSTRACT**

An electronic-ink based display device employing an addressable display assembly including a layer of electronic ink including a bi-stable non-volatile imaging material. The device includes an integrated circuit structure having a storage element for storing instructions, programs and data, and a programmed processor in electrical communication with the addressable display assembly and an antenna structure. A signal transmitting structure transmits signals from the antenna structure to a remote transceiver module. A signal receiving structure receives electromagnetic signals from the remote activator module, using the antenna structure. An on-board battery power structure, operably connected to the integrated circuit structure, supplies electrical power the integrated circuit structure, which is responsive to electromagnetic signals received from the remote transceiver module by the antenna structure and the signal receiving structure. The addressable display assembly is responsive to output signals generated by the programmed processor, to display the determined graphical indicia. The antenna structure, integrated circuit structure, signal transmitting structure, signal receiving structure, on-board battery power structure are arranged and stacked together behind and within the spatial extent of the addressable display assembly so as to form the remotely-alterable electronic-ink based display device having a stacked construction.

28 Claims, 7 Drawing Sheets